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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/501,564	Applicant(s) IKEDA ET AL.	
	Examiner Dung Lam	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/21/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim **1, 3, 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Iyer et al.** (US Pub. No. 2004/0203749) in view of **Flykt** (WO 0141395) in view of **Inoue** (US Pat. No. 6,587,882).

3. Regarding **claim 1**, **Iyer** teaches a method of managing mobility of a mobile terminal on at least one domain network including a plurality of subnets, each subnet having at least one home agent apparatus (Fig. 1), comprising:

determining a home agent (Home agent selection 108a, para. 21, 30,31 and 33; Fig. 2) for the mobile terminal to perform location management of the mobile terminal, wherein the mobile terminal inherently has communication with an access point apparatus arranged on one of the plurality of subnets and moves between the one subnet and the at least one the one domain network (21a - 21n of Fig. 1, para. 51)

registering a main home address by the mobile terminal from a main home agent apparatus (home agent) to a server (mobile proxy device 16, Fig. 1) for managing an

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address the mobile terminal to have a connection to the at least one domain network (para. 28 and 29);

and the step of registering a sub-home address to the main home agent apparatus, as a care of address, for use on another domain network different in service from, when the mobile terminal moves to the other domain network wherein the sub-home address is registered as the care of address for use on the other domain network (Col. 2, para. 17).

and the step of registering a sub-home address to the main home agent apparatus, as a care of address, for use on another domain network different in service from, when the mobile terminal moves to the other domain network wherein the sub-home address is registered as the care of address for use on the other domain network (Col. 2, para. 17).

However, Iyer does not specifically teach that there is at least one domain network, which is different in service form; and that the sub-home address is registered as the care of address for use on the other domain network specifically lasts for a specified time period (Col. 2, para. 17). In an analogous art, **Flykt** teaches mobility IP for IPV4 and IPV6 subnetworks whose services can be in different forms (Col.5 In 21-26). He further teaches the concept of "Mobility binding" which describes the association of a home address with a care-of address along with a remaining lifetime of that association (Col.3 In 1-20, Col.2 In 13-24). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to apply Iyer's teaching of home agent registration in Flykt's environments of IPV4 and IPV6 subnetworks to allow

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users the flexibility of roaming between the older mobile IP domain of IPV4 and newer domain of IPV6. It would have also been obvious for one of ordinary skill in the art to further incorporate Iyer's teaching with Flykt's teaching to have a specified time limit for the Care-of-address associated with its home agent so that the system can have a more accurate status of the mobile node 's current mobility instead of keeping the same address permanently even though the node has been disconnected or out-of-reach. However, Iyer and Flykt's combination do not expressly teach the step of changing the main home agent in response to the mobile terminal's moving to another subnet. In an analogous art, **Inoue** teaches the step of leasing the visiting network as the home network when the mobile station moves to a visiting network which broadly reads on the limitation of "responsive to the mobile terminal moving to another subnet of the plurality of subnets for a threshold period, changing the main home agent apparatus to another one of the home agent apparatus" (in response to the judgement that Abstract, Fig. 16, and 18, C3 L33-40, C4 L9-24, C9 L28-39, C22 L24-C23 L32 especially step S39 –S42). **Inoue** further teaches that since routing packets to a home agent that is physically far from the visiting network can decrease performance (C2 L9-21, C2 L64-C3 L2). In addition, **Iyer** also discloses that selection of the home agent based on route optimization (selecting the local home agent as the home agent, para. 30) can reduce expensive cost of trunk lines. Consequently, by assigning the visiting network as the home agent would result in a more direct routing of packets which would minimize transmission time delay. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine **Iyer and Flykt's** teaching of the

mobility management and **Inoue's** teaching of selecting a visiting network as the home agent when the mobile station moves to the new visiting network for a threshold of time to increase quality of service and minimize operating cost (C21 L55-63).

4. Regarding **claim 3**, Iyer teaches a method of managing mobility according to claim 1. Iyer further teaches a step of acquiring by the mobile terminal the information about a home agent to become a candidate for the main home agent apparatus from the domain network (para. 30).

5. Regarding **claim 20**, Iyer teaches a mobile terminal comprising:
a main home agent selecting section (108a, Col. 2 para. 21) for selecting a main home agent apparatus in location management and for making a registration request of a home address from a server (mobile proxy device 16, para. 1 and Fig. 1), wherein the home address is assigned by the main home agent; a mobile IP processing section (Mobile IP signaling portion 108b, para. 20) for notifying a sub-home agent a care of address for use as a home address in a foreign network when it moves to a domain network different in service form using mobile IP protocol (para. 17); and an inherent home agent registering section for notifying the main home agent of the main home address and a sub-home address for use in the foreign network (para. 26). However, Iyer does not specifically teach that there is at least one domain network, which is different in service form; and that the sub-home address is registered as the care of address for use on the other domain network specifically lasts for a specified time

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period (Col. 2, para. 17). In an analogous art, **Flykt** teaches mobility IP for IPV4 and IPV6 subnetworks whose services can be in different forms (Col.5 In 21-26). He further teaches the concept of "Mobility binding" which describes the association of a home address with a care-of address along with a remaining lifetime of that association (Col.3 In 1-20, Col.2 In 13-24). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to apply Iyer's teaching of home agent registration in Flykt's environments of IPV4 and IPV6 subnetworks to allow users the flexibility of roaming between the older mobile IP domain of IPV4 and newer domain of IPV6. It would have also been obvious for one of ordinary skill in the art to further incorporate Iyer's teaching with Flykt's teaching to have a specified time limit for the Care-of-address associated with its home agent so that the system can have a more accurate status of the mobile node 's current mobility instead of keeping the same address permanently even though the node has been disconnected or out-of-reach. However, Iyer and Flykt's combination do not expressly teach the step of changing the main home agent in response to the mobile terminal's moving to another subnet. In an analogous art, **Inoue** teaches the step of leasing the visiting network as the home network when the mobile station moves to a visiting network which broadly reads on the limitation of "responsive to the mobile terminal moving to another subnet of the plurality of subnets for a threshold period, changing the main home agent apparatus to another one of the home agent apparatus" (Abstract, Fig. 16, and 18, C3 L33-40, C4 L9-24, C9 L28-39, C22 L24-C23 L32 especially step S39 –S42). **Inoue** further teaches that since routing packets to a home agent that is physically far from the visiting network can decrease

performance (C2 L9-21, C2 L64-C3 L2). In addition, **Iyer** also discloses that selection of the home agent based on route optimization (selecting the local home agent as the home agent, para. 30) can reduce expensive cost of trunk lines. Consequently, by assigning the visiting network as the home agent would result in a more direct routing of packets which would minimize transmission time delay. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine **Iyer and Flykt's** teaching of the mobility management and **Inoue's** teaching of selecting a visiting network as the home agent when the mobile station moves to the new visiting network for a threshold of time to increase quality of service and minimize operating cost.

6. Claims **2, 4, 5-19, 21-28 and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Iyer et al.**, **Flykt** (WO 0141395) and **Inoue** (US Pat. No. 6,587,882) further in view of **Wenzel et al.** (US Publication No. **2003/0073439**).

7. **Iyer, Flykt and Inoue** teach all the limitations of claims **claim 2 and 21 except** for a candidate list stored in the mobile. In an analogous art, **Wenzel** teaches a step wherein in a home agent previously stored in a mobile terminal, is selected as a candidate for the main home agent (para. 44 and Fig. 6). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to combine Iyer's method of registering a home agent and Wenzel's teaching of selecting the candidate home agents from a list stored locally in the mobile because this combination would not only speed up but also simplify the home agent selection

process since it eliminates the need in querying for candidate agents over the network (Col. 2 and 3, para. 0030).

8. **Iyer, Flykt, Inoue and Wenzel** teach all the limitations of **claim 4 and 22**.

Wenzel further teaches a step of acquiring by the mobile terminal the information about a respective home agent apparatus to become a candidate for the main home agent apparatus from the domain network (Col. 4, para. 0044).

9. Regarding **claims 23-24**, they are apparatus claims corresponding to claims 2 and 4 respectively. Therefore, they are rejected for the same reasons as claims 2 and 4 respectively.

10. **Iyer, Flykt, Inoue and Wenzel** teach all the limitations of **claims 5-7**, wherein Wenzel teaches in the home agent determining step, when the current home agent fails (primary Home Agent fails, 7 Col. 3, par. 0030), the mobile terminal selects a new main home agent from the list of other home agents. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention was made to select a new home agent and ensure redundancy capability and enable a smooth continuation of service in the network even when the main agent has failed.

11. **Iyer, Flykt, Inoue and Wenzel** teach all the limitations of claims 8-10, wherein, in the home agent determining step, the mobile terminal determines the main home agent apparatus from the information about a respective home agent apparatus based on a preference indicator of the information (ranking ordering, Col. 3, para. 36).

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12. **Iyer, Flykt, Inoue** and Wenzel teach all the limitations of claims 11-13, wherein in the home agent determining step, the mobile terminal determines the main home agent apparatus from the information about a respective home agent apparatus.

However, they fail to explicitly teach that the selection of the main home agent is on the basis of an access frequency to the home agent apparatus. Nonetheless, Wenzel teaches a mechanism of distributing the load among secondary home agents (col. 3, para. 35), which implies that the frequency of assigning work among the home agents should be distributed equally to prevent over-working of one particular home agent and thus decrease the chance of a network failure. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention was made to select a new main agent on frequency access to prevent over-loading of the network.

13. **Iyer, Flykt, Inoue** and Wenzel teach all the limitations of claims **25-26**, wherein, the main home agent selecting section selects the main home agent apparatus from the home agent list stored in the home domain storing section, on the basis of a priority as one of information about a respective home agent apparatus (ranking ordering, Col. 3, para. 36).

14. Regarding **claims 27 and 28**, they are the corresponding method claims to the apparatus claims 9-10. They are rejected for the same reasons as 9-10.

15. **Iyer** in view of **Flykt** and Wenzel teach all the limitations of claims **35** but fails to teach that when receiving a multi-encapsulated packet, a source address described in an innermost header is taken as a destination of registering location. **Flykt** further

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teaches a multiple-encapsulated data packet (col. 6, lines 10-25). He further teaches that IP encapsulation is known to be used by Mobile IPV4/IPV6 standard provided by IETF (col. 3, lines 21-25). Therefore it would have been obvious for one of ordinary skill in the art to combine Iyer and Wenzel's teaching of the home agent registration to also include the known in the art IP encapsulation concept to facilitate the mobile IP management.

16. Claims **14-19 and 29-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Iyer, Flykt and Inoue** in view of **Wenzel** et al. (US Publication No. 2003/0073439) in further view of **Heller** (US Pub. No. 2002/0147837).

17. **Iyer, Flykt, Inoue and Wenzel** teach all the limitations of **claims 14-19** except for the registration that goes through a link layer. In an analogous art, Heller teaches a registration request step of making a request for a registration to the home agent in a domain network to be connected through a link layer of the mobile and acquired an IP address, of link layers possessed by the mobile terminal which turns into an active state, wherein, the sub-home address registering step is carried out when the registration request is granted by the home agent apparatus (para. 018). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to make use of the link layer as a standard means of communicating data in IP mobility management.

18. **Iyer, Flykt, Inoue and Wenzel** teach all the limitations of **claims 29-34** except for the registration that goes through a link layer. In an analogous art, Heller teaches the

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home agent registering section that makes a request to register to a sub-home agent apparatus through a link layer which inherently turns the sub-home agent from an inactive state to an active state, wherein a notification of a sub-home address is sent to the main home agent apparatus upon receiving a grant for the registration request by the sub-home agent apparatus (para. 018).

Response to Arguments

Applicant's arguments filed 2/21/07 have been fully considered but they are not persuasive.

Applicant argues, "Inoue, however, is silent regarding changing of a main home agent apparatus to another one of the home agent apparatus, responsive to the mobile terminal moving to another subnet for a threshold period. This is because, Inoue does not discuss anything related to the mobile terminal changing home agent apparatus responsive to moving to another subnet **for a threshold period**." The examiner respectfully disagrees. As addressed in the previous office action, Inoue teaches a step of determining whether the mobile is in the same subnet or not, after it is determined that the mobile has moved to another subnet, the home agent is changed (Fig. 16, and 18, C3 L33-40, C4 L9-24, C9 L28-39, C22 L24-C23 L32 especially step S39 –S42). In order to judge (S37) or determine that the mobile has moved to another subnet, some form of communications and processing must have taken place to determine whether the mobile is still in the same subnet or has moved, which means an elapse of time has to occur before the home agent is changed. This lapse of time broadly reads on the "threshold period". Since the claim does not specify the exact range or quantify how

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long the threshold period is (immediately, or micro seconds or milliseconds), Inoue's teaching still reads on the broad limitation. Applicant is invited to amend the claim to further define what is considered as a "threshold period" to distinguish the intended invention and to indicate where it is supported in the specification.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Lam whose telephone number is (571) 272-6497. The examiner can normally be reached on M - F 9 - 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is (571) 272-6497.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DL


LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER